Section 3
Context

Contents of this Section

3.1 Introduction

The recommendations in the City of Galveston Hazard Mitigation Plan are based in large part on identification of past and potential problems due to natural and man-made hazards. As part of the process of identifying potential problems, it is useful to understand the physical characteristics of this barrier island community. It is also important to understand any related planning efforts by the Texas Division of Emergency Management (TDEM), as well as requirements of the federal government regarding hazard mitigation plans. In addition, this section provides definitions for key terms used throughout the Plan.

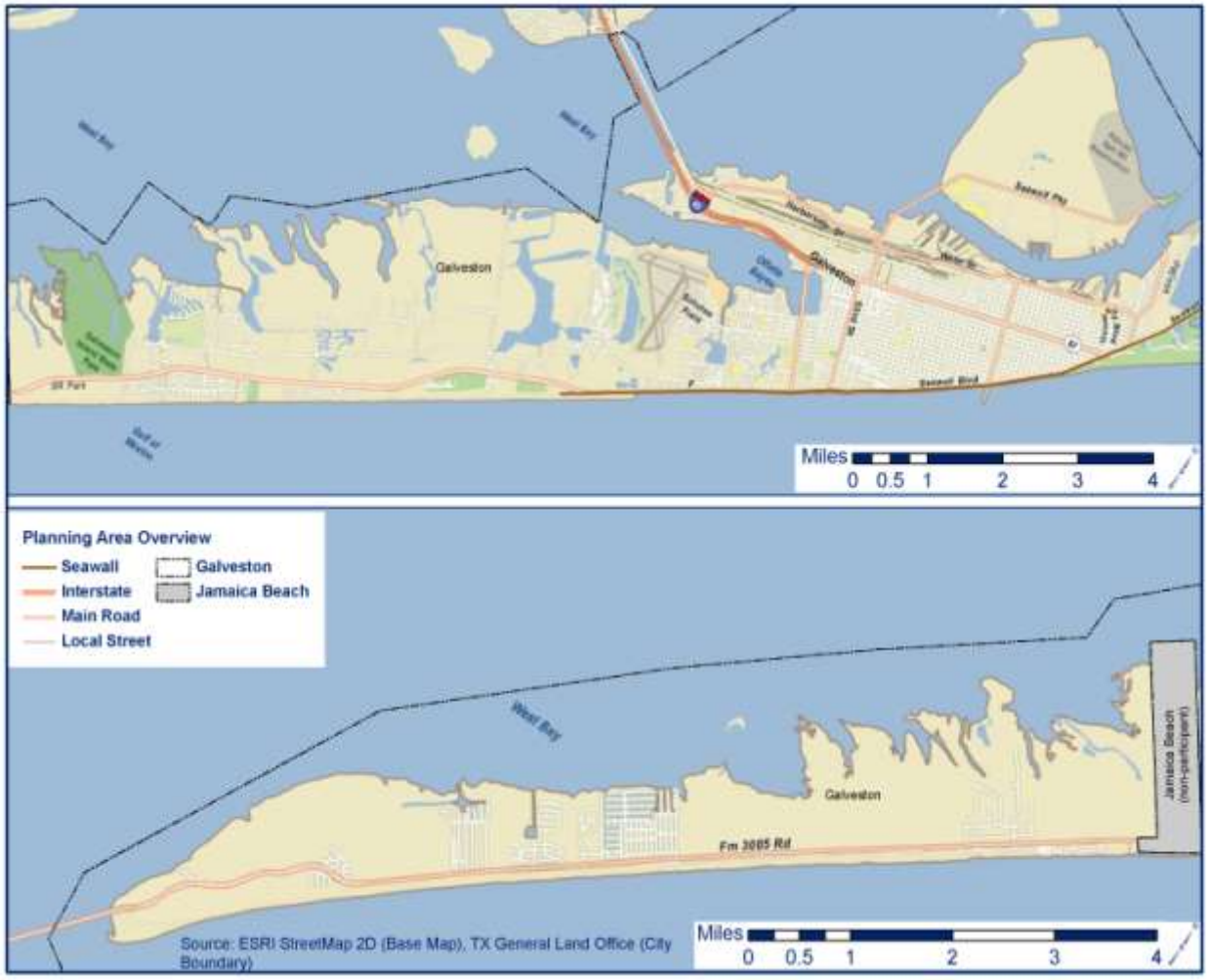
3.2 Geography, Climate, and Population of the City of Galveston

3.2.1 Geography

The City of Galveston, the county seat of Galveston County, is located in southeastern Texas, approximately 50 miles southeast of Houston. It occupies almost the entire area of Galveston Island, except for the incorporated Village of Jamaica Beach, a state park, and two other small, unincorporated areas of Galveston County. The island is almost 28 miles long and 0.5 to 2.5 miles wide at its widest point, and covers an area of 208 miles^2. The island lies approximately 2 miles off the coast of Texas, and is bounded to the north by West Bay, to the northeast by Galveston Bay and Galveston Channel, to the south and east by the Gulf of Mexico, and to the west by San Luis Pass.

Map 3.2.1-1 shows the location and area incorporated by the City of Galveston.

Map 3.2.1-1
Galveston Map
(Source: ESRI, GLO)



Transportation

Scholes International Airport at Galveston is a two-runway airport; the airport is primarily used for general aviation, offshore energy transportation, and some limited military operations. The nearest commercial airline service for the city is operated out of Houston through William P. Hobby Airport and George Bush Intercontinental Airport. The University of Texas Medical Branch has two heliports, one for Ewing Hall and one for its emergency room.

The Galveston Railway, originally established and named in 1854 as the Galveston Wharf and Cotton Press Company, is a Class III terminal switching railroad that primarily serves the transportation of cargo to and from the Port of Galveston. The railway operates 32miles of yard track at Galveston, over a 50-acre facility. Island Transit, which operates the Galveston Island Trolley manages the city's public transportation services. (NOTE: The Trolley is currently unavailable due to damage from Hurricane Ike, and is pending repairs.) Bus service is operated by

Greyhound Bus Lines out of the Galveston Station. The Port of Galveston encompasses more than 850 acres, and is the oldest commercial port in Texas. Major Port operations include cargo, rail-barge link, general dock operations, shipyard facilities, rental operations, retails and commercial areas, and is home to two Carnival Cruise ship vessels. In 2007, the Port of Galveston was ranked 6th in the nation in terms of cruise passenger embarkations.

Interstate 45 has a southern terminus in Galveston, and serves as a main artery to Galveston from mainland Galveston County, Harris County and Houston. Farm-to-Market Road 3005 (locally called FM 3005) connects Galveston to Brazoria County via the San Luis Pass-Vacek toll bridge. State Highway 87, known locally as Broadway Street, connects the island to the Bolivar Peninsula via the Bolivar Ferry.

History

Named after Bernardo de Gálvez y Madrid, Count of Gálvez, Galveston's first European settlements on the island were constructed in 1816. The Port of Galveston was established in 1825 by the Congress of Mexico following its successful revolution from Spain. The city served as the main port for the Texas Navy during the Texas Revolution, and later served as the capital of the Republic of Texas. During the 19th century, Galveston became a major U.S. commercial center and one of the largest ports in the United States. Galveston is known for the hurricane that devastated the city in 1900. That natural disaster remains the deadliest in American history.

At the end of the 19th century, the city of Galveston had a population of 37,000. Its position on the natural harbor of Galveston Bay along the Gulf of Mexico made it the center of trade in Texas, and one of the largest cotton ports in the nation, in competition with New Orleans. During this *Golden Era* of Galveston's history, the city was home to a number of state firsts that include among others the first post office (1836), the first naval base (1836), the first Texas chapter of a Masonic order (1840); the first cotton compress (1842), the first parochial school (Ursuline Academy) (1847), the first insurance company (1854), the first gas lights (1856), the first opera house (1870), the first orphanage (1876), the first telephone (1878) and the first electric lights (1883).

During the post-Civil War period, leaders such as George T. Ruby and Norris Wright Cuney, who headed the Texas Republican Party, promoted African-American civil rights helping to drastically improve educational and employment opportunities for minorities in Galveston and in Texas.

1900 Storm and Recovery

In 1900, the Island was decimated by a hurricane. This storm remains the deadliest natural disaster in US history. The City was devastated, and an estimated 6,000 to 8,000 people on the island were killed. Following the storm, a 10-mile long, 17 foot high seawall was constructed to protect the city from floods and hurricane storm surge. A team of engineers devised a plan to elevate existing portion of the city to a sufficient elevation behind a seawall so that confidence in the city could be maintained. The end result was an increase in elevation of 8-12 feet above sea level on the eastern third of the Island. The area is further protected by the Seawall. To expedite their recovery from the 1900 Hurricane, the City also developed the city commission form of city government, known as the "Galveston Plan".

Despite attempts to draw new investment to the city after the hurricane, Galveston never fully returned to its previous levels of national importance or prosperity. Development was also

hindered by the construction of the Houston Ship Channel, which brought the Port of Houston into direct competition with the natural harbor of the Port of Galveston for sea traffic. To further recovery, and rebuild the population, Galveston actively solicited immigration. Through local efforts, Galveston became the focus of an immigration plan called the Galveston Movement that, between 1907 and 1914, diverted roughly 10,000 Eastern European, Jewish immigrants from the crowded cities of the Northeastern United States. Additionally numerous other immigrant groups, including Greeks, Italians and Russian Jews came to the city during this period. This immigration trend substantially altered the ethnic makeup of the island, as well as many other areas of Texas and the western U.S.

Though the storm stalled economic development and the city of Houston grew into the region's principal metropolis, Galveston economic leaders recognized the need to diversify from the traditional port-related industries. In 1905 William Lewis Moody, Jr. and Isaac H. Kempner, members of two of Galveston's leading families, founded the American National Insurance Company; and two years later, Mr. Moody would further invest in Galveston by establishing the City National Bank, which would later become the Moody National Bank.

During the 1920s and 1930s, the City re-emerged as a major tourist destination. The City took advantage of Prohibition, and in clubs like the Balinese Room offered entertainment, gambling and liquor to wealthy Houstonians and other out-of-towners. Combined with prostitution which had existed in the city since the Civil War, Galveston became known as the sin city of the Gulf Galvestonians accepted and even supported the illegal activities, often referring to their island as the "Free State of Galveston."The island had entered what would later become known as the *Open Era*.

The 1930s and 1940s brought much change to the Island City. During World War II, the Galveston Municipal Airport, predecessor to Scholes International Airport, was re-designated a U.S. Army Air Corps base and named Galveston Army Air Field. In January 1943, Galveston Army Air Field was officially activated with the 46th Bombardment Group serving an anti-submarine role in the Gulf of Mexico.

The Galveston Seawall

The Galveston Seawall is a seawall in Galveston, Texas, USA that was built after the Galveston Hurricane of 1900 for protection from future hurricanes. Construction began in September, 1902, and the initial segment was completed on July 29, 1904. From 1904 to 1963, the seawall was extended from 3.3 miles to over 10 miles long. Reporting in the aftermath of the 1983 Hurricane Alicia, the Corps of Engineers estimated that $100 million in damage was avoided because of the seawall. On September 13, 2008 Hurricane Ike's storm surge and large waves over-topped the seawall. As a result, a commission was established by the Texas Governor following the hurricane to investigate preparing for and mitigating future disasters. A proposal has been put forth to build an "Ike Dike," a massive levee system which would protect the island from Galveston Bay, and the important industrial facilities which line the coast and the ship channel, from a future, potentially more destructive storm. The proposal has gained widespread support from a variety of business interests. As of 2009, the proposal remains in the conceptual stage.

The seawall is presently little more than 10 miles long. It is approximately 17 feet above sea level, and 16 feet thick at its base. The seawall was listed in the National Register of Historic Places in

1977 and designated a National Civil Engineering Landmark by the American Society of Civil Engineers (ASCE) in 2001.

(Image Courtesy of S.H. Kress and Co. Postcard)

Topography

The topography of Galveston Island is generally low, with little variation. The eastern 10 miles of the island is fronted by the massive Galveston Seawall. The seawall was built to an average height of approximately 17 feet (NAVD88). The land surface behind it is graded uniformly to slope downward to the north, from an elevation of approximately 14 to 18 feet adjacent to Seawall Boulevard to approximately 8 to 9 feet in the shipping industrial area of Galveston Harbor, near Galveston Channel. Natural elevation averages approximately 6 feet along the remaining 20 miles of the island, west of the Seawall. Due to increased storm-related and long-term erosion, frontal dunes along this stretch of the coast are small, and therefore provide minimal protection against wave action, particularly storm-induced waves. Galveston Island is lightly vegetated, with the majority of the open land previously used for ranching. Outside of the downtown area, the island is characterized by numerous sand ridges and swales. Large areas lying along the northern shoreline of the island are occupied by extensive tidal marshes and other lowland vegetation.

Map 3.2.1-2 shows the distribution of land cover throughout Galveston Island.

Map 3.2.1-2
Land Cover in Galveston
(Source: ESRI, GLO, HGAC)

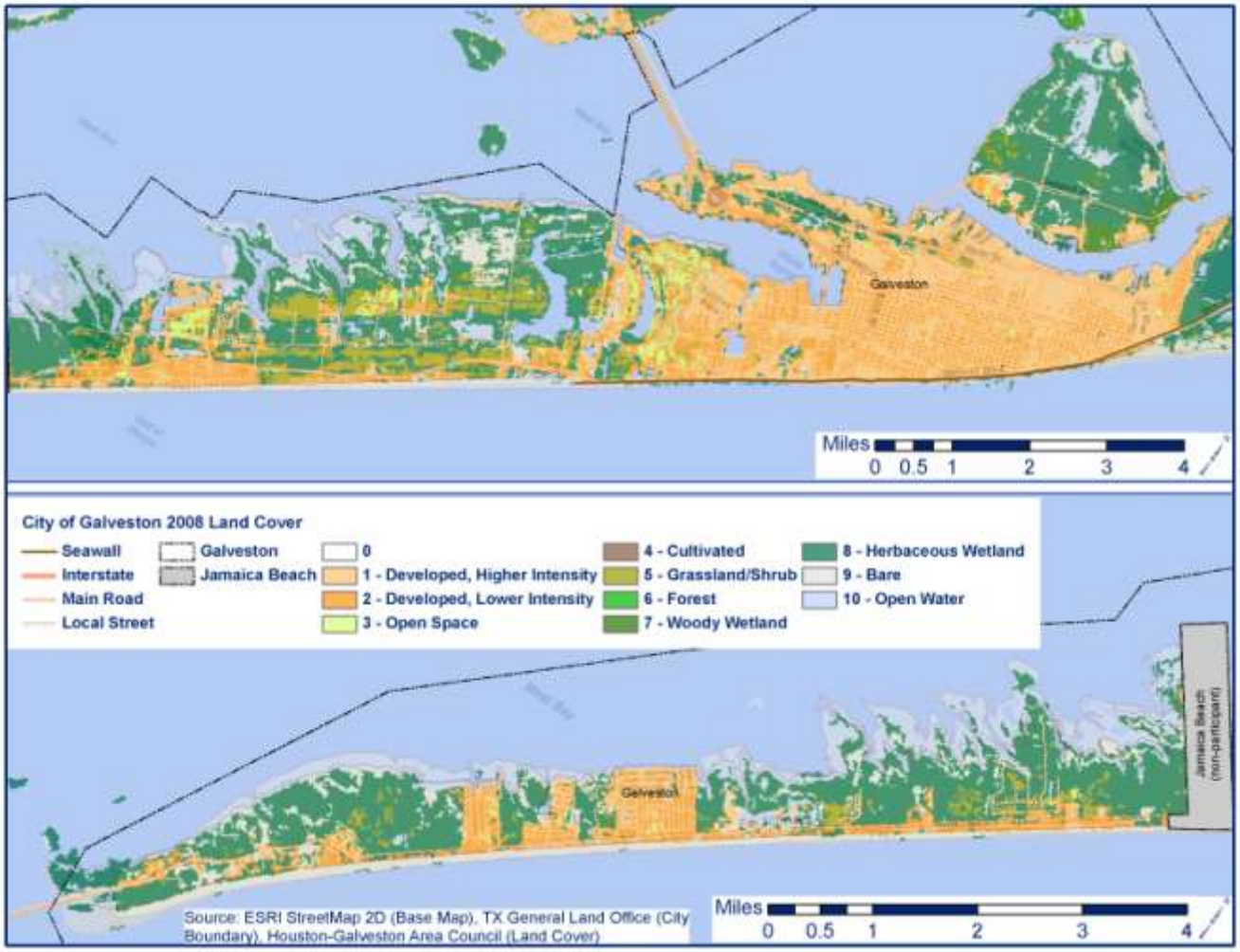


Table 3.2.1-1 demonstrates the percentage of land by purpose in Galveston.

Table 3.2.1-1
Galveston Land Use by Percentage
(Source: Spatial Sciences Lab Texas A & M, 2004)

Galveston Land Use	
Land Use	**Percentage**
Urban	24.29%
Rangeland and Agriculture	27.30%
Forest	22.64%
Water	9.05%
Wetland	16.71%
Barren	0.02%

Though the above data was produced in 2004, there has been little shift in the distribution of land use percentages in the City of Galveston since its production.

3.2.2 Climate

Galveston's climate is classified as humid subtropical. Prevailing winds from the south and southeast bring heat from the deserts of Mexico and moisture from the Gulf of Mexico. Summer temperatures regularly exceed 90°F and the area's humidity drives the heat index even higher. Winters in the area are temperate, with typical January highs above 60°F and lows near 50°F. Snowfall is generally rare. Annual rainfall averages well over 40" a year with some areas typically receiving over 50".

Hurricanes are an ever-present threat during the summer and fall season. Galveston Island and the Bolivar Peninsula are generally at the greatest risk among the communities near the Galveston Bay. However, though the island and peninsula provide some shielding, the bay shoreline still faces significant danger from storm surge

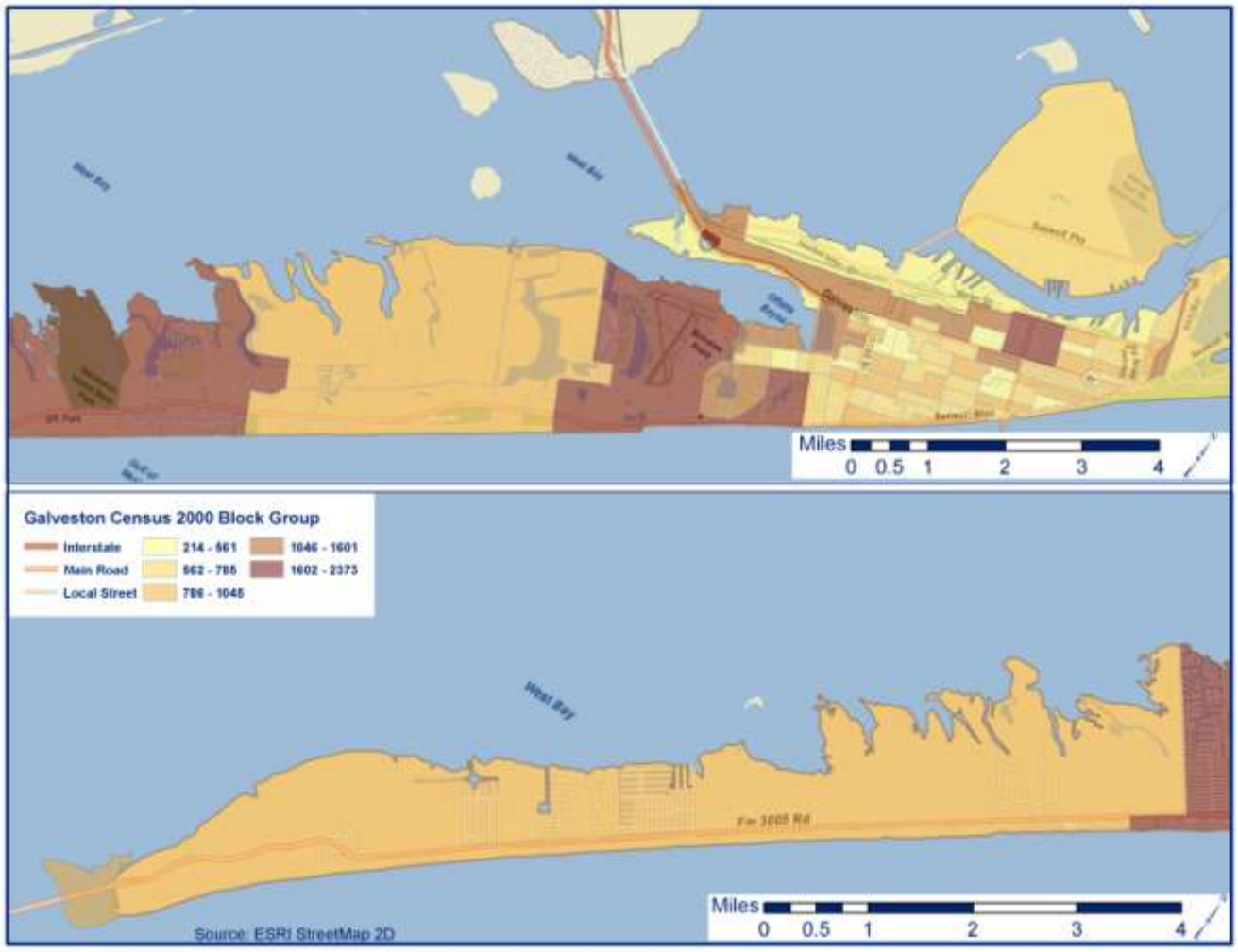
3.2.3 Population

Population estimates are generally based on Census data. However, the latest Census data available at the time of Plan development is from 2000. Hurricane Ike dramatically affected the population in Galveston, making this data largely inaccurate. This plan will use the best available data, which will include the 2000 Census, more recent Census estimates, and data that resulted from a population and demographics estimate study conducted in 2010 by Texas A&M University - Galveston (TAMUG). A summary and a copy of the complete TAMUG study can be found in Appendix M.

The 2000 Census population was 58,067. The best available population estimate, post-Hurricane Ike, places the population of Galveston at 48,373 individuals living on the Island. This number reveals an 17% loss in population, when compared to the 2000 Census population. No crucial change in the spatial distribution of the population was discovered. As before Hurricane Ike, approximately 89% of the population resides in the urban core of the East End, with the remaining 11% residing on the sparsely populated West End.

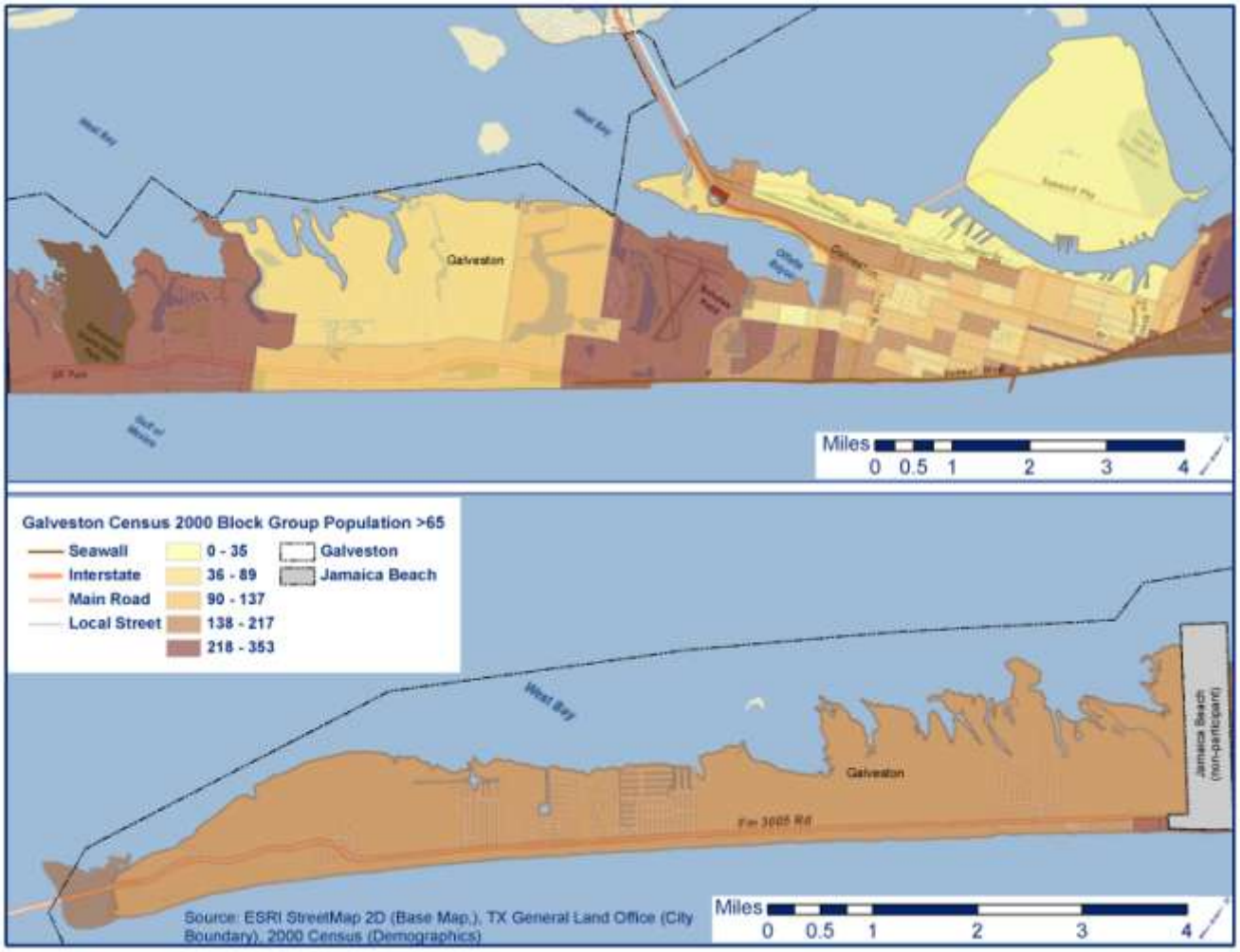
Mapping of the 2010 TAMU population estimate was not available at the time of plan development. Though the population has changed, the spatial distribution of the remaining population has not. Map 3.2.3-1 shows the population density using population figures from the 2000 Census.

Map 3.2.3-1
Population Density in Galveston Based on 2000 Census
(Source: ESRI, GLO, Census Bureau)



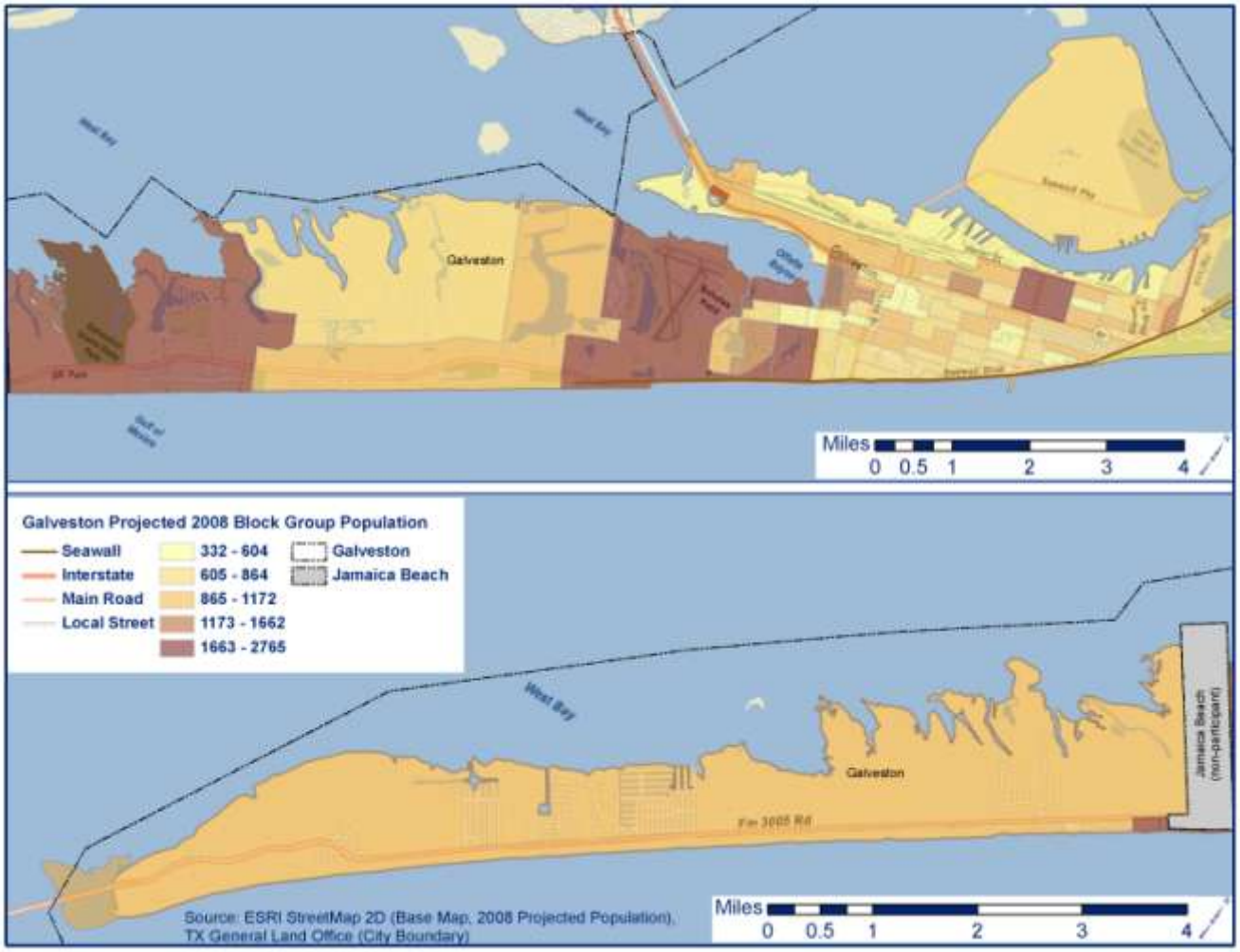
Map 3.2.3-2 shows the population density for residents over 65 years of age, using population figures from the 2000 Census.

Map 3.2.3-2
Over 65 Population Density in Galveston Based on 2000 Census
(Source: ESRI, GLO, Census Bureau)



Map 3.2.3-3 shows the population density for population estimates from the US Census Bureau in 2008. Note that the population density does not significantly differ from the 2000 Census density,

Map 3.2.3-3
Population Density in Galveston Based on 2008 Census Estimates
(Source: ESRI, GLO, Census Bureau)



A breakdown of the population of Galveston as collected by the 2000 Census is presented in Table 3.2.3-1.

Table 3.2.3-1
United States Census Population Characteristics for Galveston, TX, 2000
(Source: US Census Bureau)

City of Galveston Population Characteristics, 2000			
General Characteristics	**Galveston**	**Texas**	**United States**
Total Population	57, 714	20,851,820	281,421,906
Male %	48.3	49.6	49.1
Female %	51.7	50.4	50.9
Median Age	35.5	32.3	35.3
Under 5 Years of Age %	6.6	7.8	6.8
18 and Over %	76.6	71.8	74.3
65 and Over %	13.7	9.9	12.4
Housing Characteristics	**Galveston**	**Texas**	**United States**

City of Galveston Population Characteristics, 2000			
Total Housing Units	30, 017	8,157,575	115, 904, 641
Occupied Housing Units %	79.4	90.6	91.0
Owner-Occupied Units %	43.6	63.8	66.2
Renter-Occupied Units %	56.4	36.2	33.8
Vacant Housing Units %	20.6	9.4	9.0
Social Characteristics	**Galveston**	**Texas**	**United States**
High School Graduate or Higher % (population 25 years and over)	74.4	75.7	80.4
Bachelor's Degree or Higher % (population 25 years and over)	23.7	23.2	24.4
Disability Status (5 years and over)	21.4	19.2	19.3
Foreign Born %	12.8	13.9	11.1
Economic Characteristics	**Galveston**	**Texas**	**United States**
In Labor Force % (population 16 years and over)	59.7	63.6	63.9
Median Household Income	$28,895	$39,927	$41,994

Overall, Galveston population numbers and percentages rank closely with the state of Texas and the United States as a whole. However, there are several areas that have larger gaps. The Housing Characteristics have the highest gaps between Galveston and the Texas and U.S. figures. For instance, the percentage of occupied housing in Galveston is approximately 11% lower than both Texas and the U.S. as a whole. There are also 20% less owner occupied units in Galveston, as well as 10% higher vacancy rates. The median household income is another significant discrepancy, with Galveston averaging at least $11,000 per year less in earnings compared to Texas and the U.S.

3.2.3.1 Social Vulnerability Index (SOVI™)

For emergency response and hazard mitigation planning, populations can be assessed by their vulnerability to various hazards (fire, flood, etc). Physical vulnerability refers to a population's exposure to specific potential hazards, such as living in a designated flood hazard area. There are various methods for calculating the potential or real geographic extents for various types of hazards.

Social vulnerability refers to sensitivity to this exposure due to population and housing characteristics: age, income, disability, home value and other factors. The social vulnerability score presented in this section is determined by a web service offered by the University of South Carolina, Department of Geography, Hazards and Vulnerability Research Institute, and is based upon a 2000 article from the *Annals of the Association of American Geographers* which sums the values of 8 variables as a surrogate for "social vulnerability". For example, low-income seniors may not have access to a car to simply drive away from an ongoing hazard such as a flood. A map of the flood's extent can be overlaid on the social vulnerability layer to allow planners and responders to better understand the demographics of the people affected by the hazard.

The following population characteristics are considered to determine a population's social vulnerability:

- **Socio-economic Status** (Income, Political Power, Prestige): Socio-economic status affects the ability of a community to absorb losses and be resilient to hazard impacts. Wealth enables communities to absorb and recover from losses more quickly using insurance, social safety nets, and entitlement programs.
- **Gender:** Women often have a more difficult time during recovery than men because of sector-specific employment (e.g., personal services), lower wages, and family care responsibilities.
- **Race and ethnicity:** These factors impose language and cultural barriers and affect access to post-disaster funding and occupation of high-hazard areas.
- **Age:** Extremes of age affect the movement out of harm's way. Parents lose time and money caring for children when day care facilities are affected; the elderly may have mobility constraints or concerns that increase the burden of care and lack of resilience.
- **Commercial and industrial development:** The value, quality, and density of commercial and industrial buildings provide indicators of the state of economic health of a community, potential losses in the business community, and longer-term issues with recovery after an event.
- **Employment loss:** The potential loss of additional employment following a disaster increases the possible number of unemployed workers in a community. Such losses contribute to a slower recovery from the disaster.
- **Rural/Urban:** Rural residents may be more vulnerable because of lower incomes and more dependence on a locally based resource economy (e.g., farming or fishing). High-density areas (urban) complicate evacuation out of harm's way.
- **Residential property:** The value, quality, and density of residential construction affect potential losses and recovery. Expensive homes on the coast are costly to replace, mobile home are easily destroyed and less resilient to hazards.
- **Infrastructure and lifelines:** The loss of sewer, bridges, water, communications, and transportation infrastructure compounds potential disaster losses. The loss of infrastructure may place an insurmountable financial burden on smaller communities that lack the financial resources to rebuild.
- **Renters:** People rent because they are transients, do not have the financial resources for home ownership, or do not want the responsibility of home ownership. They often lack access to information about financial aid during recovery. In extreme cases, renters lack sufficient shelter options when lodging becomes uninhabitable or too costly to afford.
- **Occupation:** Some occupations, especially those involving resource extractions, may be severely affected by a hazard event. Self-employed fishermen suffer when their means of production is lost, and they may not have the requisite capital to resume work in a timely fashion; therefore, they may seek alternative employment. Migrant workers engaged in agriculture and low-skilled service jobs (housekeeping, child care, and gardening) may suffer similarly as disposable income fades and the need for services declines. Immigration status also affects occupational recovery.
- **Family structure:** Families with large numbers of dependents and single-parent households often have limited wherewithal to outsource care for dependents and thus must juggle work responsibilities and care for family members. All these factors affect resilience to and recovery from hazards.
- **Education:** Education is linked to socioeconomic status in that higher educational attainment affects lifetime earnings, and limited education constrains the ability to understand warning information and access recovery information.

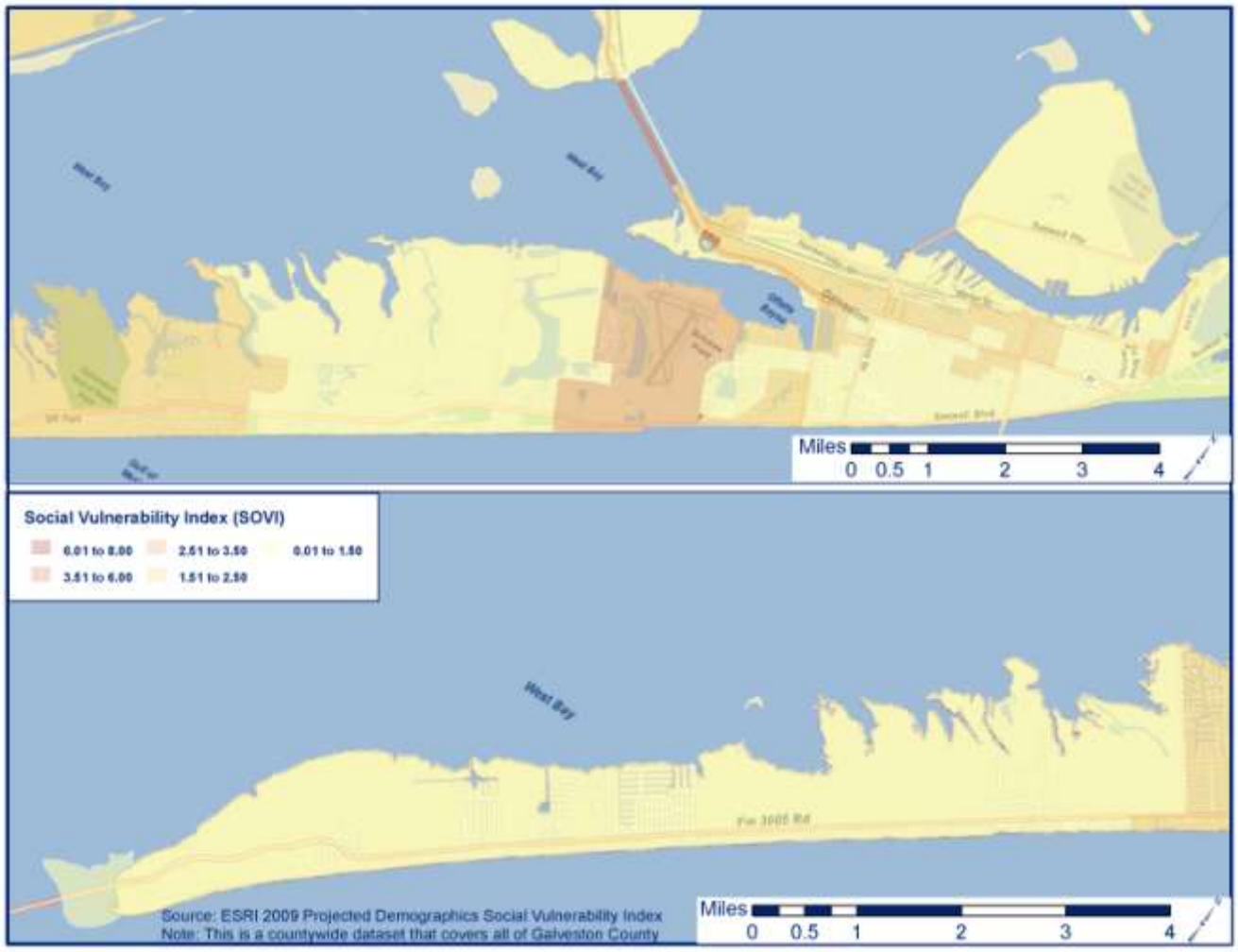
- **Population growth:** Counties experiencing rapid growth lack available high quality housing, and the social services network may not have had time to adjust to increased populations. New migrants may not be able to speak the language and may not be familiar with how to deal with bureaucracies in obtaining relief or recovery information. All these factors increase vulnerability.
- **Health status:** The public health literature shows that people with preexisting illnesses may be at risk for death/illness/injury in disaster settings. People with preexisting cardiovascular and respiratory conditions who are exposed to smoke and haze from forest fires may be more at risk for adverse health outcomes; they also may be vulnerable to heart attacks during seismic activity.
- **Medical Services:** Health care providers, including physicians, nursing homes, and hospitals, are important post-event sources of relief. The lack of proximate medical services lengthens the time needed to obtain short-term relief and achieve longer-term recovery from disasters.
- **Social dependence:** People who are totally dependent on social services for survival are already economically and socially marginalized and require additional support in the post-disaster period.
- **Special-needs population:** Special-needs populations (infirm, institutionalized, transient, the homeless) are difficult to identify, let alone measure and monitor. Yet it is this segment of society that invariably is left out of recovery efforts, largely because of this invisibility in communities.

This thematic map provides a simple summary of the social vulnerability of populations in each state or county in the United States. It answers the question "Where are the areas of relatively greater potential impact from disaster events within this state or county?" from the perspective of social vulnerability to hazards.

County-level socioeconomic and demographic data were used to construct an index of social vulnerability to environmental hazards, called the Social Vulnerability Index (SOVI™) for the United States based on 1990 data. After obtaining the relevant data, a factor analysis was used to reduce the data into set of components. Slight adjustments were made to the components to ensure that the sign of the component loadings coincided with the individual population characteristics influence on vulnerability. All components were added together to determine a numerical value that represents the social vulnerability for each county. The SOVI™ was created as a comparative index at a county-level for the entire United States.

Map 3.2.3.1-1 depicts social vulnerability at the block group level for residents of the City of Galveston. The lower the value, the more vulnerable the population in that geographic area has been determined to be. The vulnerability scale depicted in this map was refined from county-level data for Galveston County. Galveston County ranks in the 71st percentile nationally for social vulnerability.

Map 3.2.3.1-1
Social Vulnerability Index for Galveston
(Source: ESRI, Hazards and Vulnerability Research Institute)



It should be noted that the opposite side of social vulnerability is social resiliency. The indicates for SOVI™ focus on the more negative indicators that reveal vulnerability, and does not seek to capture the more positive indicators that can indicate resiliency or social strength of a community. While resiliency is not the stated purpose of SOVI™, it is a limitation of the model.

3.2.4 Economics

In the aftermath of Hurricane Ike, Galveston Island has continued the historic renaissance of a vibrant, growing and diversified economic base. As described in the Galveston Economic Development Partnership's Construction Update, more than $2.6 billion in new investment is currently underway or planned for Galveston Island. This growth includes a diversity of industries including health care, life sciences/ biotechnology, tourism/ hospitality, offshore oil, maritime, services, retail, education, and government. More than 800 jobs will be added to the economy in the near future, and over 6,600 new residential units will be added to the housing stock.

The University of Texas Medical Branch (UTMB) is in the process of investing over $600 million in campus facilities. This investment includes the Galveston National Laboratory, which was completed in 2008, and is one of two national biocontainment laboratories constructed under grants from the National Institute of Allergy and Infectious Disease. With more than 12,000 employees, the university is the largest employer in both the City of Galveston and Galveston County, and is among the largest employers in the Houston-Galveston area. Jobs attributable to UTMB numbered over 16,000 in 2006, and the university's impact on Galveston County business volume topped $350 million.

In 2007, an estimated 5.4 M visitors came to the Island. The tourism industry employs more than 30% of the City's workforce. Since 1994, the economic impact from tourism has grown annually by 3.1%. In 2007 (the most recent year figures are available), the total economic benefit to Galveston from tourism was more than $560M.

The tourism industry is growing with the addition of new hotels and expansion/renovation of existing ones; the large number of cruise ship passengers embarking/disembarking on Galveston Island; and continued redevelopment on the Seawall from east to west and in the historic Strand area. Galveston's beaches draw millions of tourists during the summer months. It is estimated that some holiday weekend days draw more than 100,000 tourists to the Island.

The Port of Galveston now ranks as the eleventh-largest cruise port in the world, the number four U.S. cruise port in world rankings, and the number one cruise port in the Gulf of Mexico and Texas. The Port continues its investment in cruise facilities. Currently, Carnival Cruise Lines and Royal Caribbean International offer sailing from Galveston Island. The Port's industrial growth continues at facilities and terminals operated by ADM Grain, Agriliance LLC, Del Monte Fresh Produce, Galveston Railroad L.P., Galveston Terminals, Gulf Copper Drydock and Rig Repair, Holcim Cement, "K" Line, Malin International Ship Repair and Drydock, and Wallenius Wilhelmsen Logistics along the Galveston Harbor.

Galveston's educational and government institutions are all in the process of expanding and/or renovating their facilities. The Galveston Independent School District (GISD) passed a $69.45 million school bond in December 2003 for improvements on all the campuses. Galveston College and Texas A&M University have both recently expanded their campus facilities. Galveston County recently completed a $105 million Criminal Justice Center on North Broadway that serves as a base for over 500 county employees. The City's Scholes International Airport has completed a traffic control tower to accommodate the dramatic increase in air traffic (from 60,000 to 104,000 operations in landing and takeoffs).

Table 3.2.4-1 depicts the major employers in the City of Galveston. The figures in the table are based on the best available data, post-Ike.

Table 3.2.4-1
Galveston, TX Major Employers and Number of Employees
(Source: Galveston Economic Development)

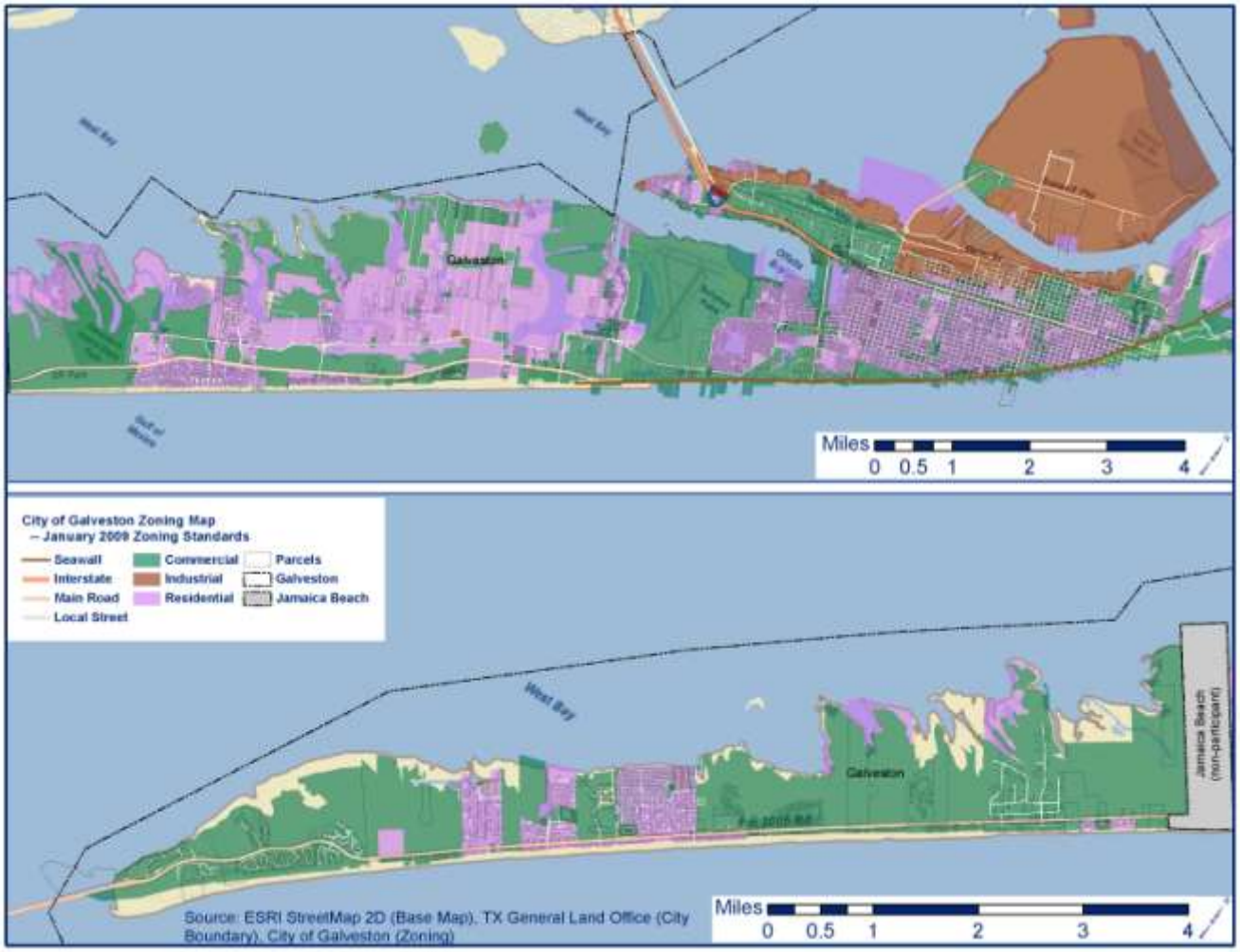
Major Employers in Galveston, TX		
Name	**Product of Service**	**Number of Employees**
University of Texas Medical Branch	University and Medical Center	12,000
American National Insurance Company	Insurance	1,600

Major Employers in Galveston, TX		
Name	**Product of Service**	**Number of Employees**
Galveston Independent School District	Schools	1,361
Landry's Restaurants	Restaurant	1,300
Moody Gardens	Garden	922
City of Galveston	Municipal Government	700
Fertitta Hospitality	Hospitality	566
Galveston College	Education	543
County of Galveston	Government	460
Texas A&M University at Galveston	Education	397
U.S. Army Corps of Engineers	Environment	400

The 2008 median household income for the City of Galveston was $36,525 compared to $55,995 for the County. Approximately 18% of families in the City live below the poverty line, whereas in the County it is 10%. As of February 2010 there were 24,210 persons from Galveston employed and there has been employment gain of 470 persons since 2005. However, the labor force has increased faster than employment resulting in an increasing unemployment rate which currently stands at 8.1%. The unemployment rate had been steadily increasing in the months preceding Hurricane Ike due to broader economic conditions and spiked to 9.7% immediately following the storm. The damage forced many businesses to close and some employers have not returned to pre-storm capacity. A recent estimate places 35,000 jobs in Galveston indicating that a significant number of jobs are being filled by people who do not live in the City.

Map 3.2.4-1 shows the distribution of land zoning in Galveston. This map focuses on residential, commercial and industrial zones.

Map 3.2.4-1
Galveston Zoning Map
(Source: ESRI, GLO, Galveston Planning and Community Development Department)

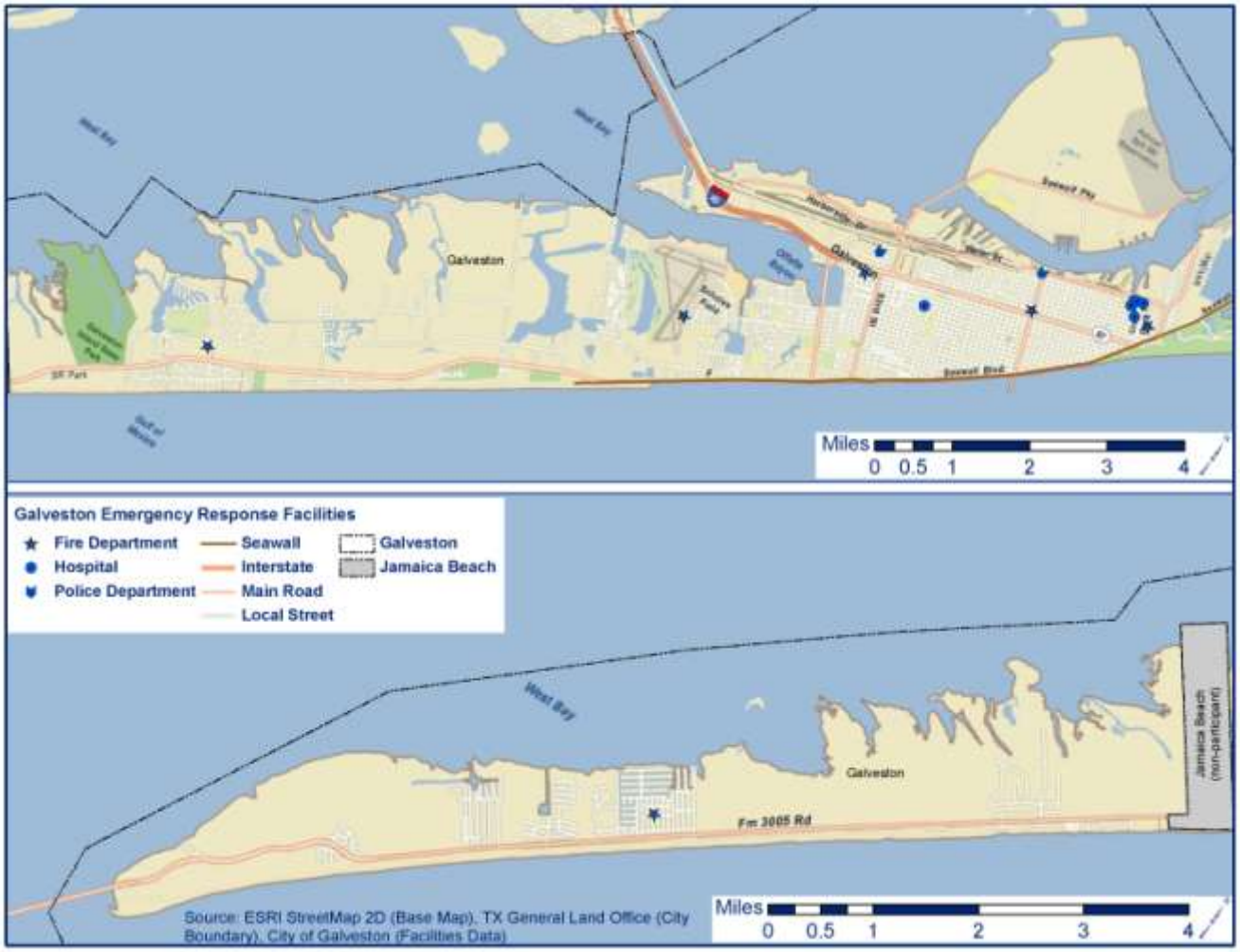


3.2.5 Community Assets

The statistics for the law enforcement, fire departments, medical services, and schools are current, but they are subject to change and will be updated appropriately.

Map 3.2.5-1 shows the locations of emergency response facilities (police, fire and medical) in the City of Galveston.

Map 3.2.5-1
Location of Emergency Response Facilities in Galveston
(Source: ESRI, GLO, Galveston Planning and Community Development)



Law Enforcement

Law enforcement in the City consists of the Galveston Police Department which serves the city and employs 172 officers, and the Galveston County Sherriff's department which employs approximately 400 officers and county jail employees. The Police Department has one facility, which is housed within the County's Criminal Justice Complex.

The Galveston Police Department is currently in the process of transitioning to a Community Policing model which calls for a more collaborative approach to policing by empowering the officer to consult with stakeholders in order to make their community a better and safer place to live and work. The Galveston Police Department has embraced this model of policing and problem solving combined with what has been called CAM. Consultation, Adaptation, and Mobilization is the formula by which neighborhood problem solving occurs.

Fire Department

Fire protection, emergency medical response and hazardous material incident response and identification in Galveston is provided by the City of Galveston through the Galveston Fire Department (GFD). The GFD consists of 117 certified firefighters, 3 executive command officers and 5 civilian employees. GFD operates from 6 fire response facilities across the island.

In the aftermath of Hurricane Ike, the GFD's hazardous material response capabilities consist of approximately 5 firefighters trained to the Technician level, 80 firefighters trained to the Operations level and 32 firefighters trained to the Awareness level. The GFD has limited equipment such as gas detectors, CO monitors, SCBAs and Level C protective clothing and Emergency Response Guides.

Prior to Hurricane Ike, GFD hand an increased hazardous materials incident response equipment cache. During the storm, the trailer containing the cache received water damage. This loss of equipment severely crippled the department's response capability. To offset this temporary loss of capability, the department currently responds to the scene of a reported release, attempt to identify the product and attempt to locate a responsible party to finance the clean up through a third party company

Medical Services

Galveston is the home of several of the largest teaching hospitals in the state, located on the campus of the University of Texas Medical Branch at Galveston. Prior to Hurricane Ike, the University employed more than 12,000 people. Ike severely damaged the 550-bed John Sealy Hospital causing the University Of Texas System Board Of Regents to cut nearly one-third of the hospital staff. Since the storm, the regents have committed to spending $713M dollars to restore the campus, construct new medical towers, and return John Sealy Hospital to its 550 bed pre-storm capacity. As recovery progresses, the laid-off staff have been brought back to the campus. The university reopened their Level I Trauma Center on August 1, 2009 which had been closed for eleven months after the hurricane, and as of September 2009, had reopened 370 hospital beds.

The city is also home to a 30-bed acute burns hospital for children, the Shriners Burns Hospital at Galveston. The Galveston hospital is one of only four in the chain of 22 non-profit Shriners hospitals that provides acute burns care. Although the Galveston Hospital was damaged by Hurricane Ike, the Shriners national convention held in July 2009 voted to repair and reopen the hospital.

Schools

Colleges and Universities

Established in 1891 with one building and fewer than 50 students, today the University of Texas Medical Branch (UTMB) campus has grown to more than 70 buildings and an enrollment of more than 2,500 students. The 84-acre campus includes schools of medicine, nursing, allied health professions, and a graduate school of biomedical sciences, as well as three institutes for advanced studies & medical humanities, a major medical library, seven hospitals, a network of clinics that provide a full range of primary and specialized medical care, numerous research facilities, and the Galveston National Lab.

Galveston is home to two post-secondary institutions offering traditional degrees in higher education. Galveston College is opened in 1967, and Texas A&M University at Galveston is an ocean-oriented branch campus of Texas A&M University.

Primary and secondary schools
The city of Galveston is served by Galveston Independent School District (GISD), which includes six elementary schools, two middle schools and one high school, Ball High School. There is also one magnet middle school, Austin Middle School, serving grades 5 through 8. The total pre-Ike enrollment for students in this school district was approximately 6,300. The average ACT score for students in the Galveston Independent School District in 2007 was 19.1 and the average SAT score was 945. The student-teacher ratio averaged 15:1.

Galveston has several state-funded charter schools not affiliated with local school districts, including kindergarten through 5th grade Ambassadors Preparatory Academy and pre-kindergarten through 8th Grade Odyssey Academy. In addition KIPP: the Knowledge Is Power Program plans to open KIPP Coastal Village in Galveston.

Several private schools exist in Galveston. The Roman Catholic Archdiocese of Galveston-Houston operates two Roman Catholic private schools, including Holy Family Catholic School (K through 8th) and O'Connell College Preparatory School (9-12). Other private schools include Satori Elementary School, Trinity Episcopal School, Seaside Christian Academy, and Heritage Christian Academy. The number of students attending the private schools in the area is approximately 450. The student-teacher ratio at these schools averages 8:1.

Parks and Recreation
Parks in Galveston: Galveston is home to a number of outdoor parks and recreation areas. Among them are: Apffel Park, Schreiber Park, Seawolf Park , Stewart Beach Park, Beach Pocket Park Number 1, Beach Pocket Park Number 2, Sheppard Park, San Jacinto Park, Texas Heroes Monument. In addition, Galveston Island is home to the Galveston Island State Park, which is a 1,900 acre state park owned and operated the by Texas Parks and Wildlife Department.

Beaches: Jamaica Beach, Bermuda Beach, East Beach, Bermuda Beach, West Beach, Palm Beach.

Tourist attractions: 1861 US Custom House GHF - Headquarters Preservation Resource Center, Central Cultural Center, Inc., 1877 Tall Ship Elissa, Bishop's Palace, 1921 Galveston County Historical Museum, Galveston Historical Foundation - Elissa, Galveston Historical Foundation, Pier 21 Theatre, Moody Mansion Museum Schlitterbahn Water Park, Moody Gardens and IMAX™.

Events: Mardi Gras, Dickens on the Strand, the Lonestar Bike Rally

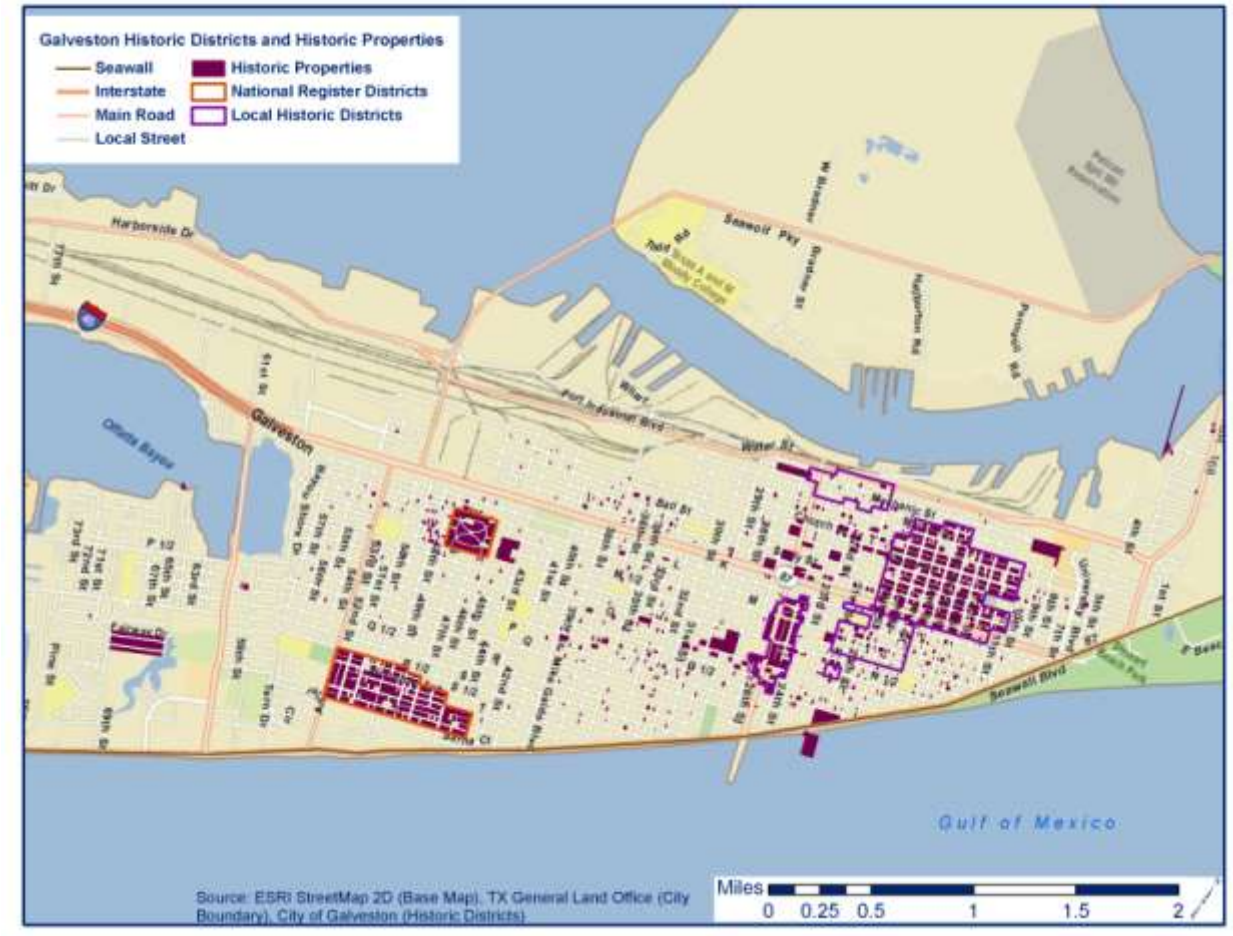
Historic Buildings and **Assets**
The Galveston Historical Foundation (GHF) was founded in 1954 specifically to save a historic building, the 1839 Samuel May Williams' house, from demolition. Since then, GHF has been responsible for the preservation of many individual places and structures that contribute to Galveston's amazingly rich architectural, cultural and maritime heritage. Through acquisition, through the Revolving Fund which buys a structure, stabilizes it and sells it with protective covenants to competent new owners, and through the variety of preservation assistance programs of the Preservation Resource Center and the office of Preservation and Conservation Services, GHF has had a strong impact in heritage preservation here for more than half a century. The following list denotes significant historical assets in the City:

- 1902 Galveston Seawall
- 1838 Michel B. Menard House: available for rentals.

- 1859 Ashton Villa: ballroom available for rentals.
- 1859 St. Joseph's Church: open by appointment; available for rentals.
- 1861 U. S. Custom House: GHF Headquarters; open during business hours and available for rentals.
- 1880 Garten Verein Pavilion in Kempner Park: available for rental.
- 1892 Bishop's Palace: open for tours seven days a week. Tours on the hour.
- 1839 Samuel May Williams House: private residence.

Map 3.2.5-2 shows the locations of notable historic assets and neighborhoods in the City of Galveston.

Map 3.2.5-2
Historic Assets and Neighborhoods in the City of Galveston
(Source: ESRI, GLO, Galveston Planning and Community Development)



Media

The *Galveston County Daily News*, founded in 1842, is the city's primary newspaper and the oldest continuously printed newspaper in Texas. It currently serves as the newspaper of record for the city as well as Galveston County. Radio station KGBC, on air since 1947, has also served as a local media outlet.

Strongest AM radio stations in Galveston*:*

- KGBC (1540 AM; 3 kW; Galveston, TX; Owner: Siga Broadcasting Corp.)

- KYST (920 AM; 5 kW; Texas City, TX; Owner: Hispanic Broadcasting, Inc.)
- KTRH (740 AM; 50 kW; Houston, TX; Owner: AMFM Texas Licenses Limited Partnership)
- KILE (1560 AM; 50 kW; Bellaire, TX; Owner: The Raftt Corporation)
- KGOL (1180 AM; 50 kW; Humble, TX; Owner: Entravision Holdings, LLC)
- KLAT (1010 AM; 10 kW; Houston, TX; Owner: Tichenor License Corporation ("TLC"))
- KEYH (850 AM; 10 kW; Houston, TX; Owner: Liberman Broadcasting Of Houston License Corp.)

Strongest FM radio stations in Galveston:

- K208DG (89.5 FM; Galveston, TX; Owner: Pacifica Foundation, Inc.)
- K247AF (97.3 FM; Galveston, TX; Owner: The KSBJ Educational Foundation)
- K201DZ (88.1 FM; Port Bolivar, TX; Owner: Aleluya Christian Broadcasting, Inc.)
- KOVE-FM (106.5 FM; Galveston, TX; Owner: HBC License Corporation)
- KLDE (107.5 FM; Lake Jackson, TX; Owner: Cxr Holdings, Inc.)
- KJIC (90.5 FM; Santa Fe, TX; Owner: Community Radio, Inc.)

Selected TV broadcast stations around Galveston:

- KJIB-LP (Channel 5; Clear Lake City, TX; Owner: Far Eastern Telecasters)
- KLTJ (Channel 22; Galveston, TX; Owner: Word Of God Fellowship, Inc.)
- KAZH (Channel 57; Baytown, TX; Owner: KAZH License, LLC)
- KTMD (Channel 48; Galveston, TX; Owner: Telemundo Of Texas Partnership, LP)
- KHOU-TV (Channel 11; Houston, TX; Owner: KHOU-TV, L.P.)
- KPRC-TV (Channel 2; Houston, TX; Owner: Post-Newsweek Stations, Houston, LP)
- KNWS-TV (Channel 51; Katy, TX; Owner: Johnson Broadcasting, Inc.)
- KXLN-TV (Channel 45; Rosenberg, TX; Owner: KXLN License Partnership, L.P.)
- KRIV (Channel 26; Houston, TX; Owner: Fox Television Stations, Inc.)
- KHWB (Channel 39; Houston, TX; Owner: KHWB, Inc.)

3.2.6 Housing, Building and Permit Activity

The City of Galveston recently received a report commissioned as a result of a need identified in their Long-Term Recovery Plan. This report is a housing market study, and it contains a great deal of information and insight as to the current housing stock, character, and disposition in Galveston. The vendor contracted to complete this study and issue the report, Camp, Dresser and McKee (CDM), completed the report in 2010.

It's worth noting that Galveston's historic roots are preeminently evident in its building stock, and is most evident in its residential building stock. An estimated 44% of the housing stock in Galveston was constructed prior to 1960. Less than 10% was constructed after 1990. While Galveston has strict zoning ordinances and building codes that are routinely enforced (discussed later in this section), it should be remembered that a significant percentage of the current building stock is currently grandfathered, and is not yet subject to these modern provisions.

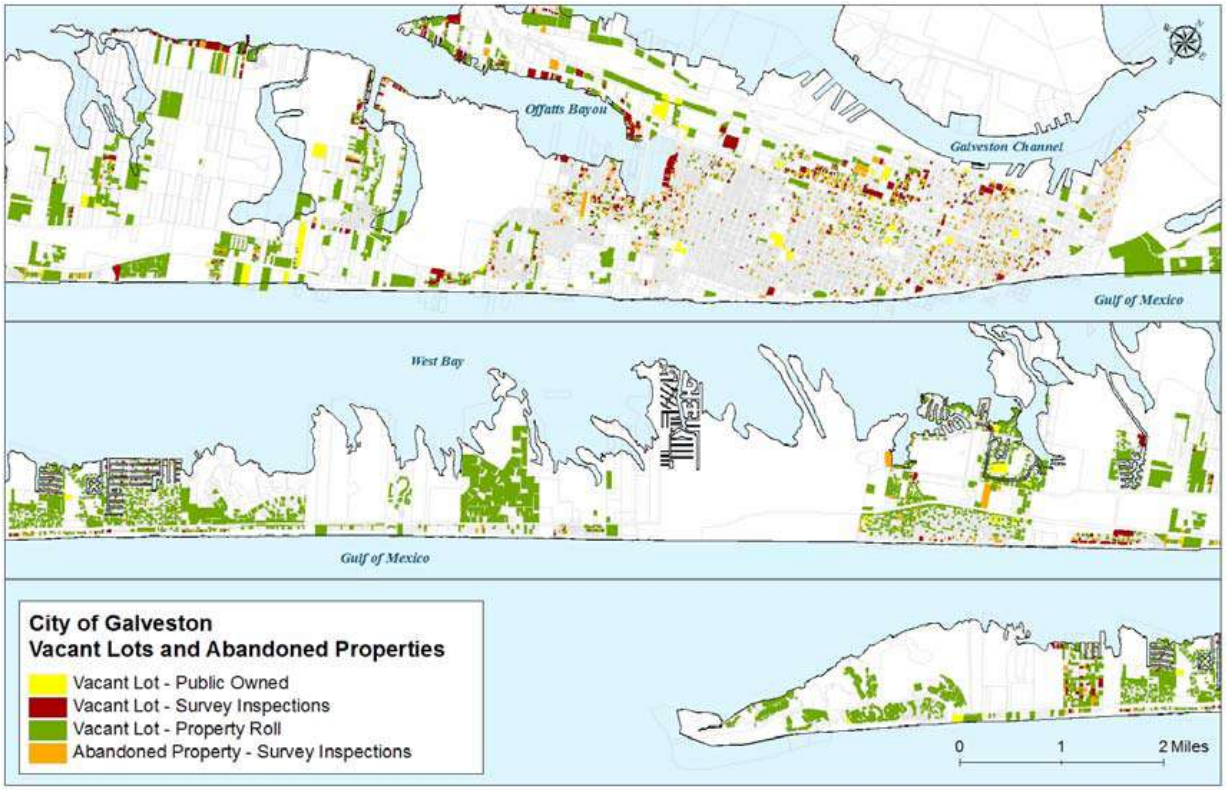
Vacant Residential Parcels

Based on the most recent Census data available, there are 33,439 housing units in Galveston. Of that 33,439, 32% (or 10,700) are vacant. These vacant units consist mainly of seasonal, recreational or occasional use homes and units, though this number does include abandoned homes as well.

According to data from the Galveston Central Appraisal District (GCAD), there are 5,256 parcels in Galveston classified as vacant. These lots are found island-wide, though there is a noticeable concentration in the areas north of Broadway, between 15th and 46th Streets. Public entities and the City itself own 252 of these vacant parcels. A recent survey conducted by the City indicates that more that 1,000 of these vacant parcels contain an abandoned structure, 177 contained boarded structures, and more than 1,600 contained a structure which exhibited some manner of code violation.

Map 3.2.6-1, presented below and taken from the City's Housing Market Study, illustrates the distribution of vacant lots and other distressed properties in the City of Galveston, as of 2009. This map does account for structures abandoned in the aftermath of Hurricane Ike, as well as those structures and lots abandoned prior to the storm.

Map 3.2.6-1
Vacant and Distressed Properties in Galveston, 2009
(Source: CDM, Housing Market Study)



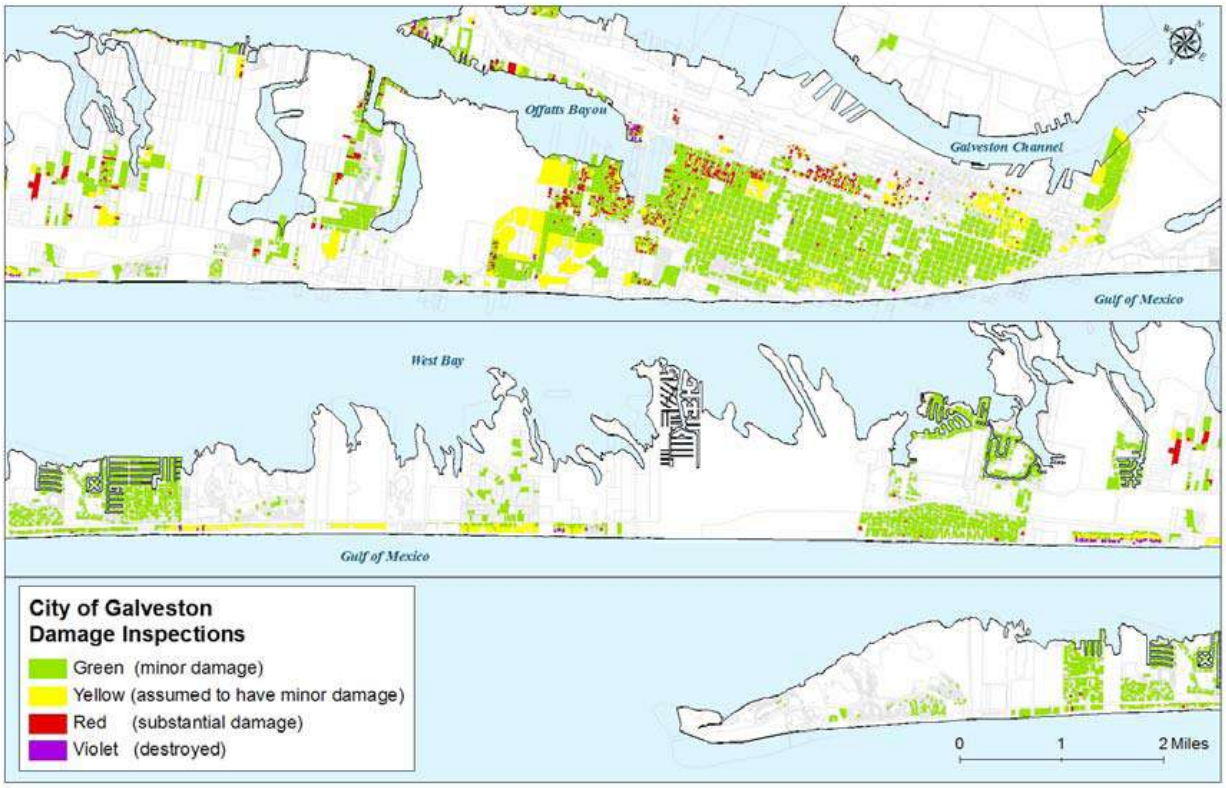
Substantial Damage and Hurricane Ike

Estimates place the number of Hurricane Ike damaged residential parcel in the City of Galveston to be 16,426, or 88% of all residential parcels in the City. Of these damaged parcels, 6% - or 947 structures – were classified as substantially damages. The areas north of Broadway and surrounding Offat's Bayou, including the Bayou Shores neighborhood, sustained the heaviest ratio

of substantially damaged structures. This is not unexpected, as these unprotected areas are also closest to potential sources of surge inundation.

Map 3.2.6-1, also taken from the Housing Market Study, shows the distribution of damaged properties as a result of Hurricane Ike. The area circled indicates the heaviest concentration of damage and the heaviest concentration of structures deemed to be substantially damaged.

Map 3.2.6-2
Damage Inspections Results in Galveston
(Source: CDM, Housing Market Study)



Building Codes and Zoning Regulations and Ordinances

The existing development codes for the City of Galveston include the Subdivision Regulations and the Zoning Standards. The Subdivision Regulations were created in the late 1950s and the Zoning Standards were created in the late 1960s. Although there have been periodic updates to these regulations over the last forty years, there has not been a comprehensive revision to these codes. The City of Galveston has a Request for Proposal currently posted for a complete revision to both sets of regulations. The revisions will include regulations that a specifically designed for a coastal/barrier island environment and address changes in technologies that are not reflected in the existing code.

The City is in the process of adopting the following sections of the 2009 International Building Code (IBC) in August 2010:

- International Building Code
- International Mechanical Code
- International Property Maintenance Code
- International Plumbing Code
- International Fuel Gas Code
- International Energy Code Council
- International Fire Code (Fire Marshal)

In addition, there are plans to revise the existing Flood Damage Prevention Ordinance. These revisions could include the addition of freeboard and the insertion of a cumulative substantial damage provision.

Building Permit Activity

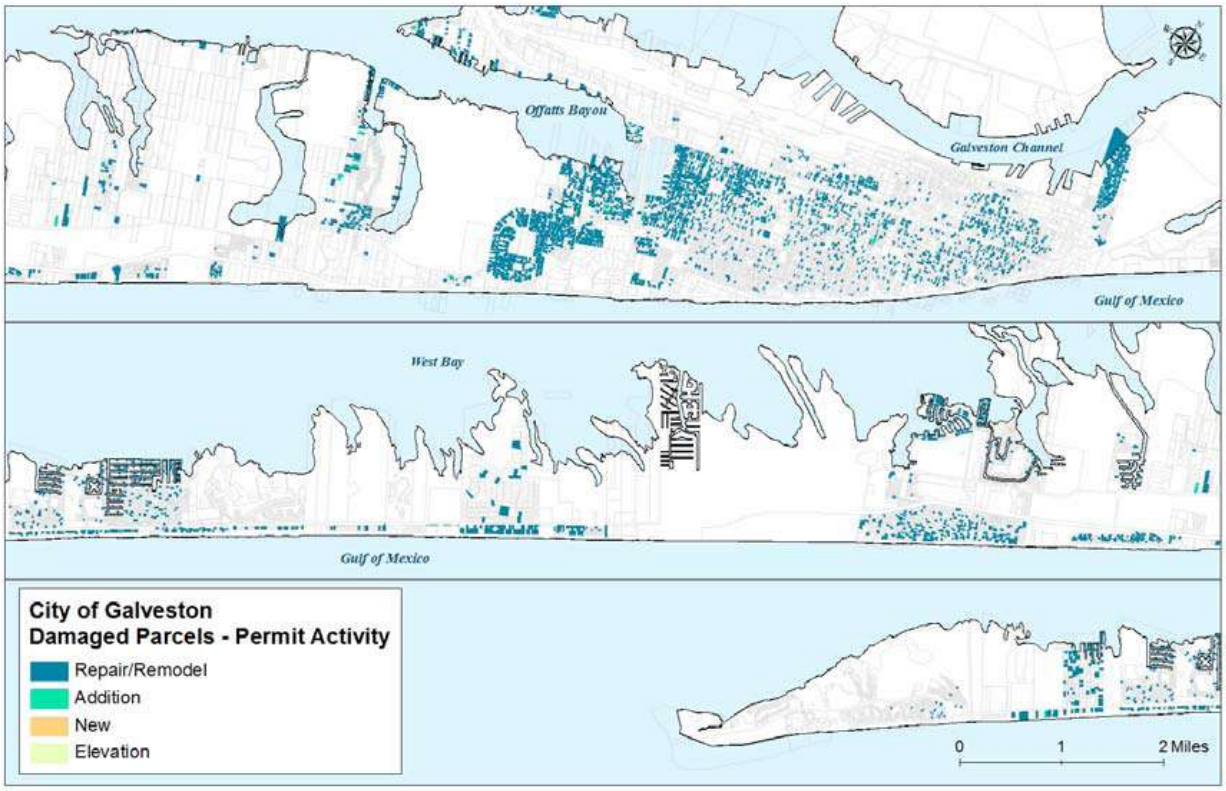
In 2009, the year after Hurricane Ike, the City's Planning and Community Development Department issued almost 11,000 construction permits, for construction activities totaling more than $165MM. This was a decrease from 2008, when the City issued 14,345 permits with total job values of more than $300MM. Table 3.2.6-1 provides information on the number of building permits issued by the City of Galveston. Note that this information is both pre- and post-Ike, and includes construction data only. The City separately records data for fences, fill, electrical, mechanical and plumbing permits. As of 2008, permits for roofs are now recorded separately as well. As of 2009, the City issues separate permits for elevation of structures, and records this information separately.

Table 3.2.6-1
Galveston Buildings Permits and Development Permits
(Source: City of Galveston Planning and Community Development Department)

Galveston Commercial and Residential Building Permits Issued, 2005 - 2009						
Year	**Category**	**Permit for Addition**	**Permit for New Construction**	**Other Permits (elevation, roof, etc.)**	**Permit for Repair or Remodel**	**Total Number of Permits Issued**
2009	Commercial	18	125	NA	333	477
2009	Residential	140	54	60	2619	2883
2008	Commercial	36	123	26	501	686
2008	Residential	193	125	326	4686	5330
2007	Commercial	49	36	34	163	282
2007	Residential	124	202	645	782	1753
2006	Commercial	70	58	109	250	487
2006	Residential	132	185	1176	779	2272
2005	Commercial	20	72	84	236	412
2005	Residential	141	239	1064	884	2328

Map 3.2.6-3 shows the location of structures obtaining building permits in the aftermath of Hurricane Ike. This map covers the period from September 13, 2008 through December 31, 2009.

Map 3.2.6-3
Post-Ike Building Permits in Galveston
(Source: CDM, Housing Market Study)



3.3 The State of Texas Hazard Mitigation Plan

The State of Texas Hazard Mitigation Plan is Annex P of the State Emergency Management Plan. The current version was approved and implemented in August 2008. The plan is available for download from:

www.txdps.state.tx.us/dem/pages/downloadableforms.htm

The state plan describes the concept of operations and state mitigation strategy and policies as follows:

- To formulate the state's mitigation policies pursuant to the principles and protocols of the National Incident Management System (NIMS), and to ensure capability for integration with the National Response Framework; to these ends, the state views mitigation in terms of pre-event and post-event mitigation;
- Pre-event mitigation involves proactive measures to identify risks and vulnerabilities that threaten citizens, property, economies and resources; post-event measures are reactive, and take advantage of funding available after a disaster, to allow communities to recover and rebuild in such a way as to prevent future loss of life and property damage;

- Hazardous conditions exist within the state, and disaster costs continue to escalate; effective mitigation can reduce these costs;
- State support and assistance will be provided as required and identified in the State Hazard Mitigation Plan; and
- The State Hazard Mitigation Officer (SHMO) is responsible for administering mitigation programs and projects, and is the team leader for the State Hazard Mitigation Team (SHMT).

"The mission of the State Hazard Mitigation Team (SHMT*)* is to:

1. Bring together staff personnel from state agencies to identify areas of vulnerability and problems intrinsic to different types of hazards.
2. Develop strategies to prevent or reduce loss of life, damage to property, and degradation of natural resources from those hazards for the state.
3. Review and recommend funding for specific mitigation projects.
4. Make specific recommendations to the Chief-GDEM for changes to state regulations, plans, or laws, which can reduce the risk of loss to the citizens of Texas."

The SHMT is lead by the Texas Division of Emergency Management (TDEM), and is comprised of representatives from a variety of state agencies. The following table lists the agencies and their responsibilities, as applicable to hazard mitigation.

Table 3.3-1
State Hazard Mitigation Team
(Source: State Hazard Mitigation Plan)

State Hazard Mitigation Team		
Agency	**Abbreviation**	**Hazard Mitigation Responsibilities**
Texas Division of Emergency Management	TDEM	To formulate the state's mitigation policies pursuant to the principles and protocols of the National Incident Management System (NIMS), and to ensure capability for integration with the National Response Framework; to these ends, the state views mitigation in terms of pre-event and post-event mitigation
General Land Office	GLO	Coordinates coastal mitigation issues such as prevention of beach erosion and improvement of the quality of beaches
Railroad Commission of Texas	RRC	Provides expertise regarding the location and movement of crude petroleum products within Texas that could affect mitigation proposals
Texas Department of Rural Affairs	TDRA	Provides policy and possible resources to local governments in an effort to prevent households from locating or relocating into flood-prone areas or zones. Administers a grant program to assist local governments with the 25% match for approved HMGP projects.
Texas Department of Insurance	TDI	Educates insurance policyholders on methods and types of products to reduce losses, claims, lower insurance premiums, and increase the availability of insurance.

State Hazard Mitigation Team		
Agency	**Abbreviation**	**Hazard Mitigation Responsibilities**
		Works with the manufacturing industry to develop and promote better construction products (e.g., roofing materials, window protection, storm clips, and other safety products). Works with local governments to develop a windstorm resistant building code and assists those entities in inspecting structures for compliance. Develops and distributes to Texans warning and mitigation brochures that provide key information in response to threats and protection against damage from hurricanes, floods, tornadoes, frozen pipes, thunderstorms, lighting, hail, and wildfires.
Texas Department of Transportation	TxDOT	Provides engineering assistance (i.e. department standards, specifications, or advice on roadway maintenance) to local governments related to the Hazard Mitigation Grant Program (HMGP)
Texas Forest Service	TFS	Provides technical assistance to local governments for fire protection in rural areas. Assists rural communities in wildfire prevention and adoption of mitigation measures such as the use of fire hydrants.
Texas Parks and Wildlife Department	TPWD	Reviews mitigation proposals to assess impact on the environment and wildlife in Texas.
Texas Water Development Board	TWDB	Provides technical assistance to local jurisdictions on floodplain management. Provides matching grants for feasibility level flood protection-planning studies. Provides funding for flood control planning projects Administers the Flood Mitigation Assistance Program and Severe Repetitive Loss Program
Lower Colorado River Authority	LCRA	The sponsoring agency for the Texas Floodplain Managers Association, a private non-profit group with the goal of furthering the education, proficiency, and standing of floodplain managers in Texas, and public knowledge/involvement in floodplain management at the local level.
Texas Municipal League Inter-Governmental Risk Pool (non-voting member)	TML	Provides Texas municipalities and other units of local government with a stable source of risk financing and loss prevention services at the lowest cost consistent with sound business practices.

State Hazard Mitigation Team		
Agency	**Abbreviation**	**Hazard Mitigation Responsibilities**
Emergency Management Association of Texas	EMAT	Provides local government input through a rotating member assignment
Texas Geographical Society	TGS	A membership-based non-profit corporation created to unite public, private, and nonprofit resources to improve government services and education through collaborative development and use of digital geographic data and related technologies. The TxGS uses geographic data and Geographic Information System (GIS) technologies to help improve government services and education in and around Texas
Texas Tech University Wind Science and Engineering Research Center	TTU WISE	The WISE Research Center at Texas Tech University is focused on wind research, education and information outreach. The Center develops information on windstorm disaster mitigation and other wind-related subjects.
National Storm Shelter Association	NSSA	The National Wind Storm Association determines the quality of manufactured and constructed storm shelters for protecting people from injury or loss of life from the effects of tornadoes, hurricanes and other devastating natural disasters.

"The GDEM Mitigation Section provides plan development assistance to local jurisdictions upon request. Providing planning assistance is a daily affair as much of it is done via telephone calls and emails. GDEM Mitigation Section developed the *DEM 21-Mitigation Handbook*. *DEM 21* provides information and guidance on the hazard mitigation process and mitigation program activities in Texas to include participation in state and federally funded mitigation opportunities. The handbook also serves as a guide for developing hazard analysis, how to develop local mitigation action plans, how to establish and maintain a viable, and effective mitigation program to reduce vulnerabilities, risks, and human suffering caused by hazards. The *DEM 21* discusses the following topics: (1) why mitigation is important; (2) building partnerships to include establishing a hazard mitigation team; (3) the hazard analysis process; (4) developing mitigation goals and strategies; and (5) developing a comprehensive MAP. It is an excellent one of a kind mitigation handbook design for Texans. The *DEM 21* is available for download from the
GDEM website:

http://www.txdps.state.tx.us/dem/pages/index.htm."

The state plan includes information regarding the following topics:

- a description of the planning process;
- a discussion of the risk assessment process;
- descriptions of state mitigation strategies;
- process by which the state supplies funding and technical assistance for the development of local mitigation plans;
- discussion of the state's commitment to a comprehensive mitigation program; and
- a description of the plan maintenance process.

Wherever possible, the Plan has incorporated information and recommendations consistent with the State of Texas Hazard Mitigation Plan.

3.4 Federal Planning Requirements

According to the federal rules describing the Disaster Mitigation Act of 2000 (FR 8848, Feb. 26, 2002, as amended at 67 FR 61515, Oct. 1, 2002), "The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards." Local plans serve "as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the state to provide technical assistance and to prioritize project funding."

Relevant federal planning requirements include establishing minimum standards for grant program eligibility and outlining a planning process.

3.4.1 Grant Program Eligibility

The various federal mitigation grant programs and their planning requirements are listed below:

Hazard Mitigation Grant Program (HMGP)
According to 44 CFR §201.3, " For disasters declared after November 1, 2004, a local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants."

Pre-Disaster Mitigation (PDM)
According to 44 CFR §203, " By November 1, 2003, local governments must have a mitigation plan approved pursuant to this section in order to receive a project grant through the PDM program, authorized under Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5133. PDM planning grants will continue to be made available to all local governments after this time to enable them to meet the requirements of this section."

Flood Mitigation Assistance (FMA)
According to 44 CFR §78.4, " To be eligible for Project Grants, an eligible applicant will develop, and have approved by the FEMA Regional Director, a Flood Mitigation Plan in accordance with §78.5."

Severe Repetitive Loss (SRL)
According to the 2008 SRL guidance, "all subapplicants must have a FEMA-approved hazard mitigation plan by the application deadline to be eligible to receive project grant funding under the SRL program."

Public Assistance (PA)
State and local governments are eligible to receive assistance in the *emergency* categories of the PA program (Categories A and B). However, an approved state hazard mitigation plan is required for any applicant, state or local, to be eligible to obtain funding assistance for any categories of "permanent work" under the FEMA Public Assistance Program [Categories C through G].

According to 44 CFR §206.226, " In order to receive assistance under this section, as of November 1, 2004 (subject to 44 CFR 201.4(a)(2)), the state must have in place a FEMA approved State Hazard Mitigation Plan Update in accordance with 44 CFR part 201."

3.4.2 Planning Process Requirements

The following excerpts from the Interim Final Rule outline the required planning process. The process used to develop this Plan for the City of Galveston is consistent with these requirements.

"In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
(2) An opportunity for neighboring communities, local, and regional agencies … businesses, academia, and other private and non-profit interests to be involved in the planning process; and
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information."

"The plan shall include the following:

(1) Documentation of the *planning process* [see Section 5 of this Plan, plus appendices] used to develop the plan …
(2) A *risk assessment* [see Sections 6 and 7 of this Plan, plus appendices] that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. … The risk assessment shall include:
  (i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. …
  (ii) A description of the jurisdiction's vulnerability to the hazards described. …
  (iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.
(3) *A mitigation strategy* [see Section 9 of this Plan, plus appendices] that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment. … This section shall include:
  (i) A description of mitigation goals …
  (ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects, …
  (iii) An action plan describing how the actions … will be prioritized, implemented, and administered by the local jurisdiction. …
  (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.
(4) A *plan maintenance process* [see Section 10 of this Plan, plus appendices] that includes:
  (i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
  (ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms …
  (iii) Discussion on how the community will continue public participation in the plan maintenance process.

(5) *Documentation* [see Section 4 of this Plan, plus appendices] that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan … For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted."

This Plan further details and explicates federal requirements for each section or element of the Plan by quoting the requirements in their entirety at the start of each relevant section.

The federal requirements continue, "Plans must be submitted to the State Hazard Mitigation Officer for initial review and coordination. The state will then send the plan to [the FEMA Region VI office] for formal review and approval. The regional review will be completed within 45 days after receipt from the state, whenever possible.

"Plans must be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for HMGP funding."

3.5 Key Terms

A complete glossary of terms used in this Plan can be found in Appendix A.

Base Flood Elevation (BFE): The height at which there is a 1% change or greater of flooding in a given year (see also 100-year flood, SFHA). The BFE is used for flood insurance policy rating. An Advisory Base Flood Elevation (ABFE) is issued when new elevations are being established but have yet to be adopted.

Disaster Mitigation Act of 2000 (DMA 2000): This legislation established a requirement that jurisdictions nationwide must develop and implement natural hazard mitigation plans in order to remain eligible for various FEMA grant programs, including those that provide funding for hazard mitigation projects.

Federal Insurance Administration: A division of FEMA responsible for administering the flood insurance aspects of the NFIP.

Flood Insurance Rate Map (FIRM): The official map of a community for which FEMA has delineated both the special hazard areas (100-yr floodplain) and the risk premium zones applicable to the community.

Flood Insurance Study (FIS): A study that is produced by FEMA and evaluates flood hazard areas, describes its causes, and identifies flood protection measures. Depending on the area studied, the FIS may include water surface elevations. An FIS is developed in conjunction with a Flood Insurance Rate Map (FIRM).

Hazard Mitigation Grant Program (HMGP): Provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is

authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

National Flood Insurance Program (NFIP): A federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

Texas Division of Emergency Management (TDEM): Texas state agency responsible for the comprehensive planning for and responding to all manner of disasters, whether man-made or natural. TDEM may also be requested to provide consequence management for large special events.

Palmer Drought Index: This index was developed by Wayne Palmer in the 1960s and uses temperature and rainfall information in a formula to determine dryness. It has become the semi-official drought index. The Palmer Index is most effective in determining long term drought.

Sea Lake and Overland Surges from Hurricanes (SLOSH) Model: Computer modeling software used to model storm surge heights from historical or hypothetical storms. The model can be used to estimate storm surge heights and winds by considering the pressure, size, forward speed, track, and winds.

Special Flood Hazard Area (SFHA): A high risk area defined as any land that would be inundated by a flood having a 1% chance of occurring in any given year (see also BFE, 100-year flood). The SFHA is commonly identified on NFIP Flood Insurance Rate Maps (FIRMs). A structure located within a SFHA shown on a FIRM has a 26% chance of suffering flood damage during the term of a 30-year mortgage.

Stakeholder Committee: Committee comprised of a cross section of individuals from emergency management, government, and non-government entities to guide the planning process.

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